elementary precaution that an enlightened municipality should take is to keep drinking water and sewage out of each other's way.

"Droplet infection" or infection by the respiratory route is another mode of spread of disease, and this form of spread is considered to be the most important route by which infections spread among the more advanced communities.

Other forms of spread which are peculiar to the social diseases, and the "unnatural" spread of diseases through bites of insect vectors are discussed in a very interesting manner.

The outlook for the future, as visualised by the author, appears alarming; most of the new diseases which have recently appeared constitute infections of the brain and the spinal cord. The nature of certain rare illnesses which occur, particularly in infants, and which are labelled encephalitis, still remains obscure; another disquieting possibility which the author fears, is the attempt on the part of the belligerents to disseminate infection artificially. The attack through the bacteriological weapons would remain invisible and unknown and death would be delayed for days. How such an insidious weapon is to be combated, is a problem of the future but let us all hope that an unhappy problem with such tragic consequences will never arise.

The volume represents a highly fascinating and stimulating account of the biological aspects of infectious diseases which afflict man and is one which is bound to command the attention of a wide circle of readers.

Practical Solution of Torsional Vibration Problems. Vol. II. By W. Ker Wilson. (Chapman & Hall, Ltd., London), 1941. Second Edition. Pp. xxi + 694. Price 42*sh.*

This is a continuation of the first volume published in 1940 by the same author. The opening chapter (Ch. 7) deals with the determination of stresses due to torsional vibration at resonant speeds. A clear conception of damped and undamped vibrations, damping coefficient, the dynamic magnifier, etc., is first given and their application is then illustrated in the design of vibration recording instruments, vibrographs, accelerometers or flexibly supported machines. This is followed by the study of exciting and damping forces with reference to propellers, air-screws and engines. The cases of apparent damping—as contrasted with the usual type of damping which functions by changing the vibrational energy into heat—viscous damping, overall damping and elastic hysteresis damping are then discussed with special reference to engine crankshaft systems. A brief account is then given of the nature and physical properties of the materials used in the manufacture of these crankshafts and this is followed by the calculation of torsional vibration stresses in them, illustrated with reference to all possible types. Typical stress diagrams are also given.

The next chapter (Ch. 8) is devoted to a detailed description and method of using different types of instruments for the measurement of torsional vibration amplitudes and stresses. The Junkers Torsiograph, the Geiger Torsiograph for low and high speeds, the D. V. L. Torsiograph, the Rotational Accelerometer, Askania Hand Torsiograph, M. I. T. Sperry Torsional Vibration Measuring Equipment, the R. A. E. Mark Va Torsiograph, the D. V. L. Recording Torsionmeter are all described with necessary details and methods of using and calibration. How the torsiograph records obtained from these instruments can be analysed and measurements made are illustrated in the next chapter, taking into consideration all typical cases. This is followed, in Chapter 10, by an exhaustive study of the methods adopted for securing a safe working speed range by an appropriate adjustment of the natural frequency or in other words by reducing the amplitude of torsional vibration by altering the position of critical speed. Four such methods are given in good detail. In all these the reduction of vibration amplitudes is accomplished without any appreciable absorption of the exciting energy. By frictional damping devices, however, it is possible to introduce into the system additional work absorbing forces which operate when the amplitude exceeds a predetermined amount; three methods of doing this have been described. In multi-cylinder engines it is sometimes possible to obtain a favourable damping effect by a different method, by alteration of the firing order, and the author has shown with illustrative examples, how this can be effected.

Another outstanding achievement in the development of vibration absorbers is that of the Rotating Pendulum Vibration Absorber. This, as the author has pointed out in his preface to the volume, is one of the most valuable contributions to the aircraft engine design in many years. An exhaustive study of its theory and constructional details forms the subject-matter of one big chapter (Ch. 11).

Yet another case in which the problem of torsional vibration comes into great prominence is in the direct coupling of d.c. or a.c. generating sets to internal combustion engines. In the last chapter the dynamic characteristics of such generating sets are discussed in full and suitable methods are suggested to keep the coefficient of cyclic irregularity to within desirable limits.

This second volume is as profusely illustrated with sketches and photographs as the first, and the number of numerical examples actually worked out with a view to elucidate the principles, is equally large. The two volumes together should be a very valuable guide to the designing engineer who has to tackle problems on torsional vibration.

E. K. R.

Bureau of Education: Education in India, 1938-39. (Government of India Press, Calcutta), 1941. Pp. 138. Price Rs. 3.

This Report has followed very closely upon the heels of the previous one for the year 1937–38. Indeed the early appearance of this Report was already foreshadowed in the preface to the previous one. While one must certainly appreciate the speed with which the work has been done, one also wonders whether in a country where education moves at the pace of a snail it is really worth while to have such elaborate annual Reports. It would appear that if any striking progress is to be recorded, and if educationists and the general public are to understand the trend of this progress, a period of at least five years should elapse between the appearance of one Report and the next.

The present Report closely resembles the previous one for 1937–38 both in regard to the content and manner of presentation. Hence the suggestions made in reviewing the previous Report, as to the desirability of providing a more suitable format, an index of topics, and bold headings for chapters, apply here also.

In a short review such as this, it is perhaps best to confine one's attention to one or two of the most outstanding features of the Report. Recent thought in Indian education has directed itself to the answering of two fundamental questions. Firstly, what is the type of education best suited to this country? Secondly, how is this education to be financed? The attempt to answer these questions has led to the formulation of two well-known schemes, the Wardha Scheme and the Vidya Mandir Scheme. Considerable reference is made to both these schemes in the Report under review.

The Wardha Scheme primarily addresses itself to the question of the type of education needed in this country and recommends emphasis upon the handicrafts. The Vidya Mandir Scheme, on the other hand, primarily concerns itself with the financing of popular schools and suggests the creation of numerous local endowments in lands and money as in the case of temples. The Report is generally sympathetic to the fundamental ideas in these schemes.

But the very origin of these schemes must be traced to the acute and growing unemployment of educated persons in recent years. It was felt that one of the most important causes for this state of things was the prevailing literary character of our educational system which produced persons who could not readily fit into the economic structure of the country. In order to consider this problem Messrs Abbott and Wood were invited to India. Their Report, which is especially concerned with the higher stages of education, advocates vocationalization and the diversion of students from university courses into practical walks of life. The Report under review deals at some length with this problem and indicates the provinces in India where new organizations along these lines are under way.

D. S. GORDON.